

# Public Comments and Agency Response Documents

## - Spring Branch -



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

W. Tayloe Murphy, Jr.  
Secretary of Natural Resources

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Robert G. Burnley  
Director

Gerard Seeley, Jr.  
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October 28, 2005

Fran Geissler  
Regional Manager  
Albemarle, Chowan & Coastal Watersheds Office  
DCR-Division of Soil and Water Conservation  
1548-A Holland Road, Suite 200  
Suffolk, VA 23434

RE: DCR Spring Branch TMDL comments (September 23, 2005)

Dear Ms. Geissler:

Thank you for commenting on the draft Spring Branch Benthic TMDL. We ~~would~~ like to take this opportunity to address your comments.

Responses to your comments are italicized below each comment submitted following this cover page. Your comments and these responses, along with all received comment documents, will be posted on the DEQ TMDL Web site with the Spring Branch TMDL document and become part of the official record.

Please let me know if you have any questions regarding the information provided. I am looking forward to our continued interaction in the future and working together to address water quality issues in the Spring Branch watershed.

Sincerely,

R. Christopher French  
TMDL Coordinator

Cc. Jason Ericson, DCR

## DCR Comments on Spring Branch Benthic Total Maximum Daily Load

Prepared by: **Jason Ericson, DCR TMDL Project Coordinator**  
**Fran Geissler, DCR Regional Manager, Suffolk**

(DCR comments are in black and DEQ responses are in italics.)

1. Page x, second paragraph, second sentence: It seems that the sentence should read "...that evaluate the overall health *of the* community".

*This wording has been changed based on your comment.*

2. Page xiii, Table ES.1: The table lists both nonpoint source and point source pollutants but is titled, *Land-based and direct nonpoint source load reductions in the Spring Branch impairment for final allocation*. The former Borden Chemical Site is incorrectly listed as a nonpoint source of pollutants. There are no NPS pollution management programs available in Virginia to address pollution from a formerly permitted and now abandoned industrial site. This is an industrial site and should be described as such. To do otherwise will mislead the public.

*As you note above, the Borden Chemical site is no longer in operation and there is no permit for the property. Currently, there is no discharge from any industrial activity on site. As such, there is no existing point source at this site anymore. Any potential contributions from this property would be coming from land-based and non-point source loadings. To classify this site as a point source would be misleading, since there is no regulated discharge and no specific "pipe" one could classify as a point source. Not all industrial sites have discharges, and as such, can be considered in the non-point source category. DEQ has started discussions with Emanuel Tire Co., the current property owner, to address sampling and possible site remediation.*

3. Page xv, second paragraph: a better explanation of the specific management practice is needed. As is, the explanation is confusing.

*In agricultural areas of the watershed, a promising management practice is a runoff management system for cropland. This has been shown to be effective in lowering phosphorus concentrations in streams.*

*The text has been changed to:*

*In agricultural areas of the watershed, promising management practices include improved nutrient management, use of cover crops, and runoff management systems such as grass swales and buffers. These practices have been shown to be effective in lowering phosphorus concentrations in streams.*

4. Page xvii: The correct name of the soil and water conservation district is : Chowan Basin Soil and Water Conservation District.

*This has been corrected based on your comment.*

5. Introduction: A description of the general land use in the watershed should be included here.

*The following sentence has been added to the last paragraph on page 1-1:*

*Land use in the Spring Branch watershed is primarily forest (67%) and agriculture (27%), with the remaining area divided between urban areas and water bodies.*

6. Page 2-3, Figure 2.1: During the public meetings, descriptions of each of the monitoring station sub-watersheds were provided verbally. Including a written description of each sub-watershed would be appropriate.

*A brief description of each of the sampling stations has been added to Table 2.1.*

7. Tables 2.4-2.6: These tables would be easier to read if a range of impairment classes was included in the text. Is there a difference between the conditions "No Impact" and "None"?

*The following sentence was added, "The RBP II protocol results in assessments that include, from best to worst: Not Impaired, Slightly Impaired, Moderately Impaired, and Severely Impaired."*

*The following sentence was added following the first sentence in the first paragraph on page 2-3:*

*Modified Rapid Bioassessment Protocol II (RBP II) benthic surveys were performed by VADEQ from the spring of 1992 through the spring of 1998 and resumed again in the spring of 2004.*

*A footnote was added to Tables 2.4 and 2.6 noting that "No Impact = Not Impaired".*

8. Table 2.12: According to the CPMI impairment threshold of 24, the reference stream is also impaired. An explanation of this is appropriate.

*RBP II is still the official listing methodology used for Spring Branch. The use of the CPMI index in the TMDL document was for the purposes of showing any long term changes that may have occurred since sampling began in the early 1990s. The CPMI is better suited to coastal streams with well defined channels and that meet specific water quality characteristics. While it is the best choice of available indexes to use for Spring Branch it is not well suited to streams that can be characterized as swamps such as*



*Spring Branch. In order to properly assess Spring Branch with the RBP II method a suitable reference station that exhibited similar characteristics had to be located. The stream that was used, Warwick Swamp, can also be characterized as a swamp. Therefore it is not surprising that it showed impairment using the CPMI index.*

9. Page 2-14, first paragraph: The inclusion of the word *pertinent* implies that there were other results of the monitoring that DEQ did not address. This could leave the impression that information was omitted from the discussion.

*This paragraph has been changed to, "Data from water quality stations used in Section 305(b) assessment and data collected during TMDL development were analyzed and discussed."*

10. Page 2-19, first full sentence: The use of the word *virtually* is vague. Not all of the results were below detection levels. Clarify the meaning of the results that were detected. What do they mean for the watershed?

*"Virtually" was changed to "The majority"*

11. Page 2-19, mid-page: The discussion of the *legacy pollution problem* is a surprise since it is not referenced in Table ES.1 of the executive summary. Similar to the former Borden Chemical Site, this site should be included in Table ES.1 as a pollutant source under the point source portion of the table.

*The difference between the two sites is that the Borden Chemical site, while no longer in operation, still exists as a potential, and suspected, source of pollution. The former Waverly STP is no longer in operation and not suspected of continuing to deliver a load to the stream. It is well beyond the scope of this study to attempt to determine what portion of the current load of phosphorus in the stream originated from the legacy source STP that discharged them between 30 and 60 years ago as opposed to the current sources of phosphorus. The TMDL was developed based on control of existing sources. As such, the sewer line break in the watershed, once identified, was added to the Waste Load Allocations. This issue has since been address by SSA.*

12. Page 2-20, second paragraph: The sentence, "In the presence of water, formaldehyde..." does not seem to fit in the context of the paragraph. Is this explaining that data showed no ammonia in the discharge because of the break down of formaldehyde?

*No, as the text notes urea breaks down into ammonia and formaldehyde breaks down into formalin and then formic acid in the presence of water. It is simply explaining the degradation pathways of the principle components used to make glue at the former Borden Chemical site.*

13. Page 2-28, first paragraph: If erosion of the former Borden Chemical Site is a possible problem, it might be helpful to include, somewhere in the document, a description of the site as it is today.

*The former Borden Chemical site is now owned by Emanuel Tire Company. This site is an active tire chipping and recycling operation. To our knowledge, there is no active land disturbance on site.*

14. Page 2-31, bottom of page: Replace the word *notorious* with the word, *known*.

*The sentence, "This STP was notorious for discharging large volumes of sewage solids that were documented to significantly impact Spring Branch."*

*Has been replaced with: "This STP was known to discharge large volumes of sewage solids that were documented to significantly impact Spring Branch."*

15. Page 3-13: There should be an explanation at the end of section 3.3 as to why toxics are considered a possible stressor but not a probable stressor. Toxicity was found at four sites (Table 3.3).

*A statement was added in section 3.3 to the effect that "no link between the toxics and the benthic impairment could be established" and "as noted in Chapter 2 DEQ performed considerable toxicity testing both dry and wet weather and were not able to isolate any likely compounds." A footnote was added to Table 3.3 noting that the conductivity at station 5ASRN003.69 was below 100 ( $\mu\text{mhos/cm}$ ) which could lead to an unreliable result.*

16. Page 3-24, bottom of page: Table 3.6 describes a situation where in every instance total nitrogen exceeds the PLE or SPP thresholds. Total phosphorus exceeds in all but one instance. This is inconsistent with the statement in the text, *because total phosphorus concentrations consistently exceed the VADEQ and USEPA screening value....* A better explanation is needed to support the selection of phosphorus as the nutrient at issue in the TMDL. This is particularly true given the amount of space in the document devoted to the nitrogenous waste products at the former Borden Chemical Site.

*Total phosphorus was selected because it exceeds an established screening value by the USEPA and VADEQ and literature values above which benthic community impairment occurs. Neither agency has proposed a screening value for nitrogen in flowing streams. In addition the role total phosphorus plays in promoting eutrophication is very well documented (This language was added to the document). In addition, scientific literature shows benthic community health is adversely affect by high levels of phosphorus.*

17. Page 4-2: The modeling does not consider the most downstream subwatershed. The only violations of the pH standard occurred at station 5ASRN000.65 in this downstream watershed. Does this modeling approach take into account conditions that could be causing this high pH downstream of Bryant Pond?

*The high pH levels downstream are due to the eutrophic conditions in Bryant Pond. The drainage from the most downstream watershed was below the pond and therefore not a factor in contributing to the conditions that exist in the pond. The other subwatersheds drain to the pond and therefore the modeling approach accurately accounts for the conditions in the pond relative to total phosphorus contributions, and resulting DO and pH issues.*

18. Table 5.1: The table is incorrectly labeled. The former Borden Chemical Site is incorrectly described as a nonpoint source pollution source. The legacy problem at the old STP is not included in the TMDL.

*While the former Borden Chemical site once had a permitted discharge to the stream, the current contribution from the site is only overland runoff, and is more accurately classified as a nonpoint source. The old STP no longer discharges to the stream, and consequently does not have an allocation in the TMDL. Please see reply to comment #2 above.*

19. Page 6-2, third paragraph: a better explanation of the specific management practice is needed. As is, the explanation is confusing.

*The statement, "For example, in agricultural areas of the watershed, a promising management practice is a runoff management system for cropland. This has been shown to be effective in lowering phosphorus concentrations in streams."*

*Has been changed to, "For example, in agricultural areas of the watershed, promising management practices include improved nutrient management, use of cover crops, and runoff management systems such as grass swales and buffers. These practices have been shown to be effective in lowering phosphorus concentrations in streams."*



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## MEMORANDUM

To: Richard Sedgley, AquaLaw, PLC

From: Chris French, DEQ PRO TMDL Coordinator

Cc: Larry Malcom (Sussex Service Authority), Clifton Bell (Malcolm Pirnie), Rob Bodkin (MapTech, Inc.), Mark Alling, Jutta Schneider, Charles Martin

Date: 09/20/05

RE: Reply for model input parameters per request

Attached you will find the response to your request for model inputs used in the Spring Branch Benthic TMDL. Please let me know if you have any questions.

(Reply submitted via email and USPS)

**Responses to AquaLaw PLC Comments (9/14/2005)**  
**Spring Branch TMDL**

**Can you define the reasons for the changes to the inputs, and the reasons for the choice of particular numbers from a range?**

Initially, input parameters were selected based on research of a range of values from across the country, particularly the state of Virginia and northeastern North Carolina. As TMDL development progressed, MapTech continued to review literature to find parameter values, which are most representative of the study area.

**In particular, for the P Loading Factors, what research provided the 2 to 616 mg/kg range?**

Various manuals, journal articles, approved TMDL reports, and research papers including:

Haith, Mandal, Wu. 1992. GWLF. Generalized Watershed Loading Factors. Version 2.0. User's Manual

Langland. 1998. Yields and Trends of Nutrients and Total Suspended Solids in Nontidal Areas of the Chesapeake Bay Basin, 1985-96. USGS Water Resources Investigations Report 98-4192.

Litke. 1999. Review of Phosphorus Control Measures in the United States and Their Effects on Water Quality. USGS Water Resources Investigations Report 99-4007.

USGS Fact Sheet FS-128-99. Phosphorus Loads Entering Long Pond, A Small Embayment of Lake Ontario near Rochester, New York.

**What was the basis for the original choice of 200 from this range?**

As noted above, there were data available from various sources, localized and regional, but none for this specific study area. Regional data reported in the GWLF manual indicated a range from < 88 mg/kg to 308 mg/kg. Based on this and other information, and considering the sandy soils in the study area, a sediment attached phosphorus value of 200 mg/kg appeared to be an appropriate estimate.

**Then for the later work, what were the "two studies in the Coastal Plains of Virginia"?**

1) Mostaghimi, S., McClellan, P.W., Gupta, R.K., Vaughan, D.H., Fu, Y. 1997. Suitability of Precision Farming Technology in the Virginia's Coastal Resources Management Area. Prepared for Commonwealth of Virginia, Department of Environmental Quality, and Virginia Coastal Resources Management Program. Grant No. NA570Z0561-01.

2) Mostaghimi, S., Tim, U.S., McClellan, P.W., Carr, J.C., Byler, R.K., Dillaha, T.A., and Shanholtz, V.O. 1988. Watershed/Water Quality Monitoring for Evaluating BMP Effectiveness-

**What is the basis for the selection of a sediment attached P value of 20.6 mg/kg?**

The sediment attached P value of 20.6 mg/kg is the mean value of soil P level from samples collected on two farms in Surry County, Virginia in 1996 (sited in reference 1 in previous question).

**As to the dissolved P values ranging from 0.006 to 0.160 mg/l, what numbers were used for what locations/segments, and what was the basis for those choices?**

The dissolved P concentrations are based on land use: 0.006 mg/L for forest, 0.100 mg/L for pasture, and 0.160 mg/L for cropland. Dissolved P values for agricultural uses were selected from a range of values from samples collected in the Nomini Creek watershed, Westmoreland County, Virginia (sited in reference 2 above) and then adjusted in model calibration.

**As to the Trapping Factors, what factors were used for what locations/segments, and what was the basis for the choices and the later changes?**

The calibrated trapping factors were 0.99 for the headwaters of Spring Branch, 0.98 from the headwaters to the pond, and 0.97 for the land area draining directly into the pond. Figure 4.1 of the draft report "Total Maximum Daily Load Development for Spring Branch" shows the location of the stream segments (headwaters - subwatersheds 1 and 6, mid-section - subwatersheds 2 and 3, pond drainage - subwatershed 4). The highest trapping factor was selected for subwatersheds 1 and 6 which were located farthest from the pond and were mostly forested. Values for trapping factors were decreased for segments closer to the pond and with less forested area.



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October 28, 2005

Mr. Larry Malcolm  
Sussex Service Authority  
4385 Beef Steak Road  
Waverly, VA 23890

RE: August 24<sup>th</sup> and September 26<sup>th</sup>, 2005 Correspondence on Spring Branch TMDL

Dear Larry:

Thank you for your written comments on the Spring Branch Benthic TMDL. We received the first set of comments after the second TAC meeting and just prior to the public meeting on August 25<sup>th</sup>. You provided me the second set of comments in person on September 26<sup>th</sup>. We would like to take this opportunity to address your concerns.

Responses to your comments are italicized below each comment submitted following this cover page. Your comments and these responses, along with all received comment documents, will be posted on the DEQ TMDL Web site with the Spring Branch TMDL document and become part of the official record.

Please let me know if you have any questions regarding the information provided. I am looking forward to our continued interaction in the future and working together to address water quality issues in the Spring Branch watershed.

Sincerely,

A handwritten signature in cursive script, appearing to read "Chris French".

R. Christopher French  
TMDL Coordinator  
Piedmont Regional Office, DEQ



**Responses to Comments by Sussex Service Authority/VAMWA dated September 26, 2005**

(SSA general comments are in Bold, their specific comments are in black, and DEQ responses are in italics.)

**pH and DO are Not Correctly Identified as the Most Probable Stressors**

1. The instream pH and DO data are excellent. TMDL Tables 2.17 to 2.22. Contrary to the TMDL emphasis on the lower part, the pH and DO conditions become worse as you move upstream. Id.

*Response: The TMDL document notes that Spring Branch exhibits swamp like characteristics particularly the upstream portion, which is a natural condition. Swamps can be expected to have lower pH values due to the organic acids present and lower dissolved oxygen due to the decomposition of organic matter and lack of physical re-aeration. In the lower portion of Spring Branch at monitoring station 5ASRN000.65 the pH is significantly higher than the upstream monitoring stations and there have been violations of the State's maximum pH standard (9.0 std units). Elevated total phosphorus concentrations change the dynamics of the stream to an unnatural condition by stimulating eutrophic conditions in Bryant Pond that result in high pH values in the Pond and in Spring Branch below the Pond.*

2. Bryant Pond pH and DO appear normal. TMDL Table 2.22.

*Response: Table 2.22 notes that the maximum pH value measured in Bryant Pond was 9.45 (std units). This measurement was made in June 2004 and is well above the State's maximum water quality standard of 9.0 (std units) and is not characteristic of the typical pH concentrations in the Spring Branch watershed, or other local watersheds in the Blackwater River system. A dissolved oxygen concentration of 0.65 (mg/L) was measured in the pond in July 2004. Contrast this dissolved oxygen result with a measurement of greater than 20 (mg/L) made in March 2005. Such DO swings typically indicate hyper-eutrophic conditions, and together with the elevated pH, demonstrate that DO and pH measurements in Bryant Pond are not normal.*

3. The relatively low upper tributary DO shown in Table 2.28 is clearly unrepresentative of the entire data set, and the DO data displayed for the lower tributary is good anyway.

*Response: We are unclear as to the purpose of this comment, however the data in Table 2.28 was all collected on the mainstem of Spring Branch in June of 2004. Table 2.24 presents data collected for 5AXAW000.19 which is an upper tributary with greater slope and aeration than the mainstem. Therefore, the DO in this table is higher than what can be expected in the remainder of the watershed. The point of*



Table 2.28 was to demonstrate a significant water quality difference between the upper portion of Spring Br above the STP, and Spring Branch below the STP.

4. Table 3.5 displays DO data that are again selective and nonrepresentative, and are in any event good for a swamp such as Spring Branch.

*Response: We agree that the low concentrations particularly at the upper stations are representative of swamp conditions. Table 3.5 was intended to highlight that low DO conditions exist in Spring Branch at various locations and times. A threshold DO concentration of 4.0 mg/l was chosen because it is the State's generally applicable minimum DO criterion. Because Spring Branch has been re-classified as a Class VII water, lower DO can be expected there at times. However, at the present time the State's minimum dissolved oxygen standard for Spring Branch is still 4.0 (mg/L) and the values shown in Table 3.5 represent violations of the current standard. The document will be modified to state that a lower minimum DO criterion may be associated with Class VII waters and is expected to be identified in the next triennial review process of Virginia's water quality standards. Also, tables 2.17 – 2.21 present the DO data for Spring Branch in a representative manner.*

5. The attribution of a pH standard exceedance at lower tributary station 0.65, TMDL p. 3-14, appears to be incorrect. While the text notes 2 of 10 values inconsistent with the pH standard, the data appear to show only 2 out of 21 data points with a very marginal exceedance of the 9.0 pH standard. TMDL Fig. 3.14.

*Response: The language on page 3-14 has been corrected to reflect 21 values assessed. While we agree that the percentage of violations is not very high, they are nevertheless an indicator of the hyper-eutrophic conditions in Bryant Pond and the associated aquatic life impacts downstream.*

6. In view of these data, the conclusion that pH is a "Probable Stressor," TMDL p. 3-13, is not supported.

*Response: See response to # 4.*

7. Spring Branch is classified as Class VII swamp water and there is no applicable numeric water quality standard for DO. As indicated above, instream DO is good anyway. The selective reference to DO "violations," TMDL Table 3.5, is therefore incorrect. There is no numeric standard to "violate." The DO is excellent for a swamp. TMDL Figs. 3.16 to 3.20.

*Response: In the absence of a specific DO criterion for Class VII waters, the minimum DO criterion of 4.0 mg/l applies. The term DO Violations is appropriate. However, the document will be modified to note that VADEQ will begin the process of developing a dissolved oxygen standard for Class VII waters.*

8. In view of these data, and the TMDL incorrect references to DO "violations" and "minimum standard," the conclusion that DO is a Probable Stressor is not supported.

*Response: Dissolved oxygen was listed as a probable stressor along with pH and nutrients because it is likely that the natural condition is being exacerbated by the excess total phosphorus and resulting eutrophication in the lower portion of Spring Branch.*

#### **The TMDL ignores Confirmed Toxics Problems**

9. Recent (November, 2004) Whole Effluent Toxicity (WET) data demonstrate both acute and chronic water column toxicity at stations 1.99 and 3.69 above the POTW. TMDL p. 2-28 and Table 3.3. There is no toxicity data below the POTW.

*Response: Your statement on downstream toxicity data is inaccurate. WET data for downstream stations is available in the same sections of the report you reference above (pg. 2-28 & 29; Table 3.3). These WET tests show acute toxicity to fathead minnows (fathead minnows were the species impacted in the upstream test). Regardless, the USEPA toxicity report noted that the results from these tests should be carefully compared to other available water quality data for Spring Branch. In other words the results of these single tests alone do not confirm a toxicity problem. More importantly the report noted that the conductivity at station 5ASRN003.69 was less than 100 ( $\mu\text{mhos/cm}$ ) and this can cause an inaccurate test result. Following the results of these tests, DEQ did extensive follow up toxics monitoring during both wet and dry weather conditions. Tests conducted included volatile organics, semi-volatile organics, clean metals, and sediment organic chemical analysis. No compound could be found at concentrations high enough to cause toxicity. In fact, most were below the minimum level of detection. DEQ conducted a thorough follow up on the potential toxicity issue in Spring Branch. The data does not show any direct evidence of toxicity to the benthic community of Spring Branch. Therefore the TMDL report is*

*correct in considering toxics possible stressors and focusing instead on a confirmed problem of nutrient enrichment in the lower watershed.*

10. The TMDL confirms that "waste products are still reaching the tributary periodically" from the old Borden Chemical waste disposal site. TMDL p. 2-20. Table 2-25 shows very bad water column data from the unnamed tributary below Borden Chemical.

*Response: Table 2.25 described the single date worst case sample results from the unnamed tributary draining the former Borden Chemical site. They were not representative of the dataset from this station. The report does confirm that there were some high nitrogen values in the unnamed tributary draining the former Borden Chemical site. However, they were insufficient to cause any toxicity. We were unable to document any water quality impacts that these periodically high nitrogen concentrations from the former Borden Chemical site caused in upper Spring Branch. At 5ASRN003.69 immediately below the former Borden Chemical site, all ammonia values sampled during the TMDL monitoring were less than 50 percent of even the chronic ammonia criteria.*

11. The chemical specific data considered are water column data, TMDL pp. 2-18 to -19, and are not particularly instructive as to the listed benthic (sediment) impairment.

*Response: Benthic refers to much more than sediment, rather it pertains to the entire bottom of a water body. A few benthic organisms usually exist in the sediment layer but most are found in various types of habitat like woody debris, undercut banks, leaf packs, etc in the aquatic environment above the sediment layer. It is well documented and beyond scientific dispute that water column chemistry directly impacts benthic organisms.*

12. High groundwater ammonia toxicant data are identified in the upper tributary. TMDL pp. 2-29 & 3-12.

*Response: The water quality data for station 5ASRN003.69 (just downstream of the upper tributary) on Spring Branch demonstrated that there have been no exceedances of even the chronic ammonia water quality standard since Borden Chemical ceased operations several years ago. See response to #10.*

13. Although acknowledging that toxics are "Possible Stressors," TMDL p. 3-13, (the evidence overwhelmingly supports toxics identification as Confirmed Stressors), the TMDL ultimately ignores toxics, apparently in favor of the easier approach of identifying pH, DO and TP. This is presumably because of the requirement that "TMDLs must be developed for a specific pollutant," TMDL p. xi, and the

relative difficulty of identifying the specific chemical toxicants, a process that has not been attempted but it is our understanding they will be in the future.

*Response: Current water quality data does not show a definitive toxicity connection from the former Borden site to the Spring Branch benthic impairment. The sole toxicity connection involves one set of positive toxicity data from bioassay tests. EPA performed the tests and stipulated that "...these data need to be carefully compared to other water quality data available...to determine the presence of toxicity." DEQ performed substantial follow up toxics monitoring for volatile organics, semi-volatile organics, clean metals, and sediment organic chemical analysis in Spring Branch, the tributary draining the former Borden site, and the reference station on Warwick Swamp (used as a background). This sampling resulted in an expenditure of approximately \$16,500.00. Every organic compound tested at stations 5AXFG000.04 (the tributary below the former Borden site), and 5ASRN003.69 (the sampling station below Rt. 460) was below detection, and dissolved metals were at normal concentrations. Your statement that evidence overwhelmingly supports toxics as confirmed stressors is incorrect. Further, the TMDL did not ignore toxics, having performed extensive toxics monitoring as described above. Thus the statement that identifying toxicants has not been attempted is also incorrect. (Please also see the response to # 9 above).*

14. The Department has identified possible Toxicity Identification Evaluation/Toxicity Reduction Evaluation approaches to the toxics problems. These are standard, accepted approaches that the Department has not had the opportunity to undertake.

*Response: DEQ initially looked into addressing the former Borden site through the VPDES permit program. However because a VPDES permit is no longer in effect for the facility, this route was not appropriate. Because Borden consultant data indicated high nitrogen constituents in groundwater and soil contamination on the former Borden Chemical site, DEQ considered a TIE/TRE approach as you state. However this approach involves tiered, specialized, and repeated toxicity tests which are very expensive and would take years to complete. Therefore DEQ is now working directly with Emmanuel Tire Co., the current property owner, to address sampling and site remediation.*

#### **Benthic Data do not Support the TMDL Emphasis on the Lower Tributary**

15. The 1995-98 RBP II data are always better at the lower tributary (stations 1.24 and 0.65). TMDL Tables 2.2 & 2.3.

*Response: Table 2.2 does not refer to the years 1995-98. Table 2.3 indicates that the RBP II data at lower station 5ASRN001.24 was worse than the upper station, contrary to your statement above. And this more severely impaired status at the station just below the STP outfall occurred despite being compared to the marginal reference*

station 5ASRN003.82, which was impacted by low to occasionally zero flows. The benthic community at station 5ASRN001.24 was markedly worse than the reference station subject to intermittent, low or zero flows. The TMDL report clearly indicates that the impairment in upper Spring Branch is primarily due to natural causes. These include lower flows, in some cases even the absence of flow, and braided flow pattern. There is considerably more water in the lower portion and a better-defined channel, which is more conducive to aquatic life. In spite of this condition, the lower Spring Branch benthic monitoring stations are still impaired. In comparing the benthic macroinvertebrate results between upper and lower Spring Branch, it is instructive to analyze the most significant differences between stations 5ASRN001.99 and 5ASRN001.24. The benthic studies from 2004 and 2005 show there is a marked decrease in the quality of the benthic community at 5ASRN001.24 relative to 5ASRN001.99. In both Spring 2004 and Spring 2005, the benthic community at 5ASRN001.99 exhibited greater taxa richness (average of 15.5 families for 5ASRN001.99 vs. 9 families for 5ASRN001.24) and a higher percentage of mayflies (average of 27% for 5ASRN001.99 vs. 4.5% for 5ASRN001.24). The lower benthic scores at 5ASRN001.24 occur despite the fact that DO violations are more frequent at 5ASRN001.99. Although the recent habitat scores for these stations are slightly lower for 5ASRN001.24, they are not sufficient to explain the observed differences in benthic communities. The most prominent difference in water chemistry between these two stations is total phosphorous which rises dramatically from 5ASRN001.99 (median TP = 0.1 mg/L) to 5ASRN001.24 (median TP = 0.43). While there are also increases in nitrogen species from 5ASRN001.99 to 5ASRN001.24, they are less dramatic and unlikely to account for the observed benthic results since phosphorous is usually the limiting nutrient in freshwater systems.

16. The same effect is largely seen for the current data. TMDL Tables 2.4 to 2.12.

*Response:* Actually Table 2.4 indicates that the RBPII data at lower stations 5ASRN001.24 and 5ASRN000.65 were again *worse* than at station 5ASRN001.99, contrary to your statement above. Table 2.12 actually deals only with CPMI scores at the reference station and does not address Spring Branch stations at all.

17. The current prevalence of none, slight and moderate impairment scores at stations 1.24 and 0.65 do not support their continued listing as impaired for benthic impacts. Water Quality Assessment Guidance Manual for Y2006 (DEQ Aug., 2005) (draft) at 6.4.2.2.

*Response:* USEPA requires two consecutive benthic impairment results of "Not Impaired" before a stream can be de-listed (removed from the 303(d) list). None of the benthic monitoring stations on Spring Branch meet this criterion and they are therefore considered by Virginia and the USEPA to be impaired and requiring a TMDL.

**The TMDL Development process has the appearance of a targeted conclusion.**

18. The initial draft TMDL credited the POTW and cumulative nonpoint sources with, respectively, approximately 1/3 and 2/3 of the overall TP loading to Spring Branch. In the final draft, this ratio was switched through changes in the literature values used for estimating these loadings.

*Response: The initial draft TMDL report never had language attributing 1/3 of the total phosphorus loading to the POTW and 2/3 to cumulative non-point sources. The information the comment refers to was preliminary modeling results that were presented at the second technical advisory committee meeting. It was noted at that time that the results were preliminary and that work was continuing on the model. Following the meeting more accurate information was obtained (sediment-attached total phosphorus values) which did change the existing condition, but had a minimal impact on the final allocations. The TMDL process actually precludes a "targeted" conclusion because every possible stressor must be analyzed.*

19. The sole use of literature values for this purpose is not sufficiently accurate for a TMDL. Field work could readily provide proper data.

*Response: Additional, more localized, data were acquired as part of the model refinement discussed in the response to comment #18. Additionally, the model was calibrated to phosphorus measurements collected in the stream above Bryant Pond and in the pond itself. Calibration of a water quality model to measured in-stream conditions is, in the final analysis, the best way to be certain that local conditions are being accurately represented in the model.*

20. In particular, the consultant's switch to a 20 mg/kg sediment-attached phosphorus literature value, from the prior 200 mg/kg literature value, severely influenced the end result.

*Response: The 20 mg/kg value used was obtained from numerous agricultural field studies in neighboring Surry County, as compared to the more generalized value (200 mg/kg) reported for the region. This change did not severely influence the end result, which is the load allocation for point and non-point sources in the watershed. Only a minor change in the final WLA and LA resulted from the sediment-attached phosphorus improvement to the model input.*

21. The 20 mg/kg value is inappropriate for agricultural and forested lands.

*Response: As noted in #20 above the 20 mg/kg came from studies on agricultural fields geographically very close to the Spring Branch watershed (Surry County). This is consistent with the sandy soils in the area that are not capable of retaining the level of phosphorus associated with soils containing more clay.*



22. It is not rational to use an arbitrary literature value for this critical purpose, given the 2 to 616 mg/kg literature range cited in the record.

*Response: It is rational to use a value from the same basin and with similar watershed characteristics and soils.*

23. This portion of the TMDL should be redone, and field data should be used for the most critical modeling purposes.

*Response: See response to #19. The TMDL has been developed thoroughly and with the best available data.*

#### **The TMDL Uses Unpromulgated Values to set a binding standard**

24. The TMDL relies heavily on DEQ's 0.2 mg/l TP "screening value," and the Carlson's TSI Index of 60 (resulting in a Bryant Pond TMDL endpoint of 48.1 mg/l TP) as if they were water quality standards or other binding norms. This represents a continuation of the overly generic approach taken to all of the TMDL development.

*Response: The Carlson TSI index has been used in numerous scientific studies across the United States and also in a number of USEPA approved TMDLs. It is a well-established scientific procedure. The Carlson TSI score of 60 equates to eutrophic water quality conditions. Therefore the TMDL endpoint improves Spring Branch below the STP and Bryant Pond from the current hyper-eutrophic condition down to a more healthy and expected eutrophic level. A TMDL water-quality endpoint for an aquatic life impairment is selected to ensure the health of the aquatic community.*

25. It is improper to allow the 48.1 mg/l Bryant Pond TP number determined in this manner to drive the eventual TMDL calculations.

*Response: The EUTROMOD/Carlson TSI TP endpoint is 48.1 ug/l. The 48.1 ug/l TP value equates to a nutrient load which would maintain aquatic life in Spring Branch below the STP and in Bryant Pond at a healthy eutrophic level. The EUTROMOD approach was used in accordance with other TMDL studies in other states, approved by the USEPA (Unnamed Tributary to Chickahominy River Watershed, USEPA approved 8/5/2004).*

26. ...the TMDL should have placed more focus on the chemical toxic impacts...

*Response: See responses to #9, #12, and #13.*

27. Finally, it appears from the record that the modeling shows that TP reduction at the POTW, in the absence of substantial additional nonpoint source TP reductions, would have little or no beneficial effect. The majority of the instream

and Bryant Pond eutrophication problem (to the extent that TP is a controlling issue at all as to the listed benthic impairment) appears to be nonpoint source TP, TP cycling within Bryant Pond, and the fact that this is swamp water.

*Response: Actually the modeling indicates that the required TP reductions at the POTW would reduce TP concentrations in Bryant Pond by approximately 50%. This can hardly be called little or no beneficial effect, but rather is a substantial beneficial improvement for Spring Branch below the STP and Bryant Pond. In addition it is not valid to assume that there will be no reductions in the cumulative non-point source contributions.*

28. We believe that DEQ should take one of three approaches to correct this situation, or some combination of the three. First, the TMDL may be redone with a proper emphasis on the identified toxics impacts, and using a field data collection program if the Department believes that TP may be an important factor. Second, the current data do not support an impairment listing for Spring Branch below the POTW, and that listing should be removed through the current 2006 303(d) process. Third, DEQ may develop a specifically tiered TMDL that does not require in the initial tier substantial capital investment in the POTW for TP removal that may have little or no positive impact. However, we have started and would like to continue implementing TP reductions at the treatment facility and would like to find ways to partner with DEQ in further reductions. This could be an excellent opportunity for a pilot project or program that could have larger scale benefits.

*Response: First, please see responses #s 9, 10, 12, and 13 dealing with prior comments on toxics. Second, please see response # 17 dealing with EPA mandated de-listing requirements. Third, DEQ does not have the option of developing a phased or tiered TMDL. This is unnecessary because of the four year compliance period that would be proposed for the reissued Spring Branch STP permit, with reissuance due in January 2007. This affords a total of more than five years from the date of this response document within which to implement pH reductions to comply with the 145.82 kg/yr wasteload allocation. DEQ is confident that SSA can achieve compliance within five years.*

*Please see response # 27 on beneficial impact of the TMDL. We applaud SSA's proactive initiation of TP reductions at the Spring Branch STP, and look forward to continued partnership with SSA with the goal of further TP reductions to satisfy the TMDL.*



DEQ and MapTech Responses to Sussex Service Authority Comments Dated 8/24/2005.

(SSA comments are in black. DEQ responses are in italics.)

1. Second paragraph "We believe the correct first step in this process is for the Department to determine whether the impairment is natural or manmade."

*Response: Assuming that the impairment is natural, EPA would require it to be de-listed from the 303(d) list. In order for this happen it must be demonstrated, to EPA's satisfaction, that there are no anthropogenic pollutants in the watershed. EPA requires that the VADEQ use a screening level of 0.2 (mg/L) for total phosphorus in the 305(b) water quality assessment. Frequent concentrations above this screening level are deemed by EPA to be evidence of anthropogenic nutrient pollution. Less than half of the total phosphorus concentrations at 5ASRN001.24 are below the screening level. Therefore, even acknowledging the impact of the natural physical conditions in the watershed, an argument that the impairment is entirely natural cannot be made.*

2. Third paragraph – use of the CPMI in the public and TAC meetings.

*Response: Spring Branch was listed on the 303(d) list because of impaired ratings based upon the Rapid Bioassessment Protocol II (RBP II). It was difficult to find a suitable reference station for the benthic surveys in the 1990's. However, as explained during the public meetings the benthic assemblages consisted almost entirely of intermediate and pollution tolerant organisms so the impairment classification was appropriate. For the benthic surveys performed in 2004 and 2005 Warwick Swamp was used as the reference station for the RBP II method. Impairment was indicated at 5ASRN001.24 during all three benthic surveys (Tables 2.4 – 2.6 in the TMDL document). For a benthic station to be de-listed by EPA it must have two consecutive non-impaired ratings. The CPMI index was used during the meetings to show the relationship between the surveys performed in the 1990's and the more recent ones. It was not used to place Spring Branch on the 303(d) list. There is a direct correlation between CPMI scores and the RBP II ratings for the stations on Spring Branch.*

3. Fourth paragraph – "determine cause(s) of the impairment"

*Response: The purpose of the stressor analysis performed during the TMDL process is to determine the cause(s) of impairment using all of the data that is available. While the listing of Spring Branch attributed the impairment to the former Borden chemical plant site, the stressor analysis could not confirm this statement, in spite of considerable additional toxics sampling under low and high flow conditions by DEQ. The stressor analysis did identify excess total phosphorus concentrations in the lower portion of Spring Branch and established that maximum pH water quality standard violations were the result of excess total phosphorus in the stream.*

4. Fifth paragraph – “determine whether phosphorus is a stressor as to the benthic impairment.”

*Response: The citations provided in the TMDL document clearly establish the role of excess total phosphorus (TP) in contributing to declines in benthic health. There is extensive scientific literature from multiple states including Virginia that indicate there is a negative correlation between TP and the quality of the benthic community (VDEQ 2004, Ohio EPA 1999, Miltner and Rankin 1998, and Sheeder and Evans 2004).*

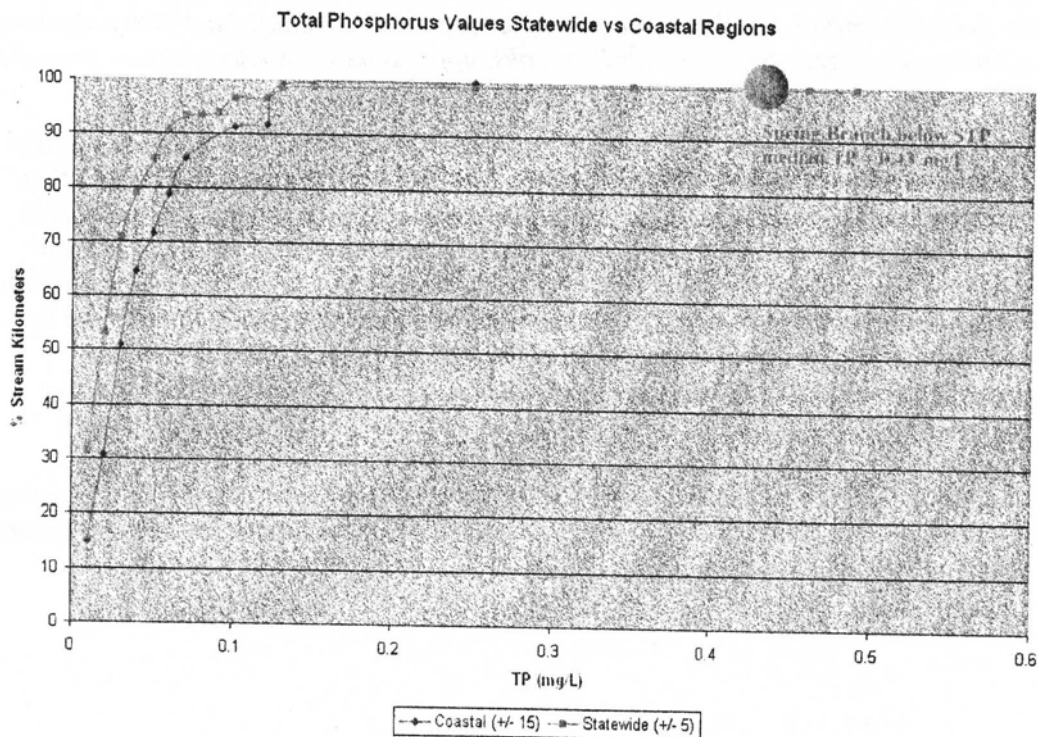
*Furthermore, degradation of the benthic community occurs at TP levels below that observed below the STP (Sheeder and Evans 2004). In the Virginia Probmon biological monitoring program as of 2001, VDEQ collected TP and benthic macroinvertebrate data at 97 randomly selected stream sample sites statewide. Benthic community RBPII metrics were strongly correlated with TP, ortho-phosphorus, total Kjeldahl nitrogen, and ammonia. Mayflies, stoneflies and caddisflies (EPT metric), percent mayflies (PEPH metric), percent scrapers (PSCRAP metric), and the VaSCI (the new Virginia Stream Condition Index currently under Academic Advisory Committee review) were negatively related to TP. These insect families, scrapers and the VaSCI decline as TP increases. TP negatively impacts the number of families of mayflies, stoneflies, and caddisflies; the percent of mayflies and scrapers in a sample, and an overall community benthic health index.*

*That phosphorus plays a major role in benthic macroinvertebrate impairment has been shown in other states. Ohio EPA (1999) stated that in Ohio higher median TP corresponds to lower biological integrity index values in most ecoregions and stream sizes, and that median background levels of TP are typically much less than 0.10 mg/l statewide in Ohio. Median TP below the Spring Branch STP were 0.43 mg/l. Miltner and Rankin (1998) stated that elevated levels of nitrogen and phosphorus are associated with reduced levels of benthic macroinvertebrate and fish community integrity, and that phosphorus is more strongly associated with levels of stream biological integrity in Iowa. Sheeder and Evans (2004) stated that impaired watersheds in Pennsylvania have median TP levels of 0.15 mg/l, while attaining (healthy) watersheds have median TPs of 0.03 mg/l., thus indicating a strong link between increasing TP and decreasing quality of the benthic community.*

*The same relationship holds for Spring Branch benthic community integrity and total phosphorus during the spring and fall of 2004. This is the period of TMDL development when both macroinvertebrates and nutrients, including TP, were sampled. Median TP at the Warwick Swamp reference station was 0.05 mg/l, and the average benthic RBPII score was 37. At the impaired station on Spring Branch below the STP, the median TP was much higher at 0.43 mg/l, while the average RBPII score was much lower at 23.*

*Spring Branch TP below the STP contains the highest instream TP that DEQ has ever found in the Coastal Plain of Virginia, in which Spring Branch is located. With a median of 0.43 mg/l and a mean of 0.71 mg/l TP during TMDL development, Spring Branch TP below the STP is nearly two times the 100<sup>th</sup> percentile TP of 0.25 mg/l for waters of the Coastal Plain in the Virginia probabilistic monitoring (Probmon) study of randomly selected stations as of 2001. Spring Branch TP is nearly equal at 0.43 mg/l to the 99<sup>th</sup>*

percentile TP of 0.46 mg/l **statewide** in the Prohmon study of 292 randomly selected stations. Further, Spring Branch TP below the STP is also far greater than the Rohm, Omernik, Woods, and Stoddard (2002) median TP of 0.034 mg/l for streams without point source discharges in the Eastern Coastal Plain (Region XIV) of the United States, in which Spring Branch is located. In Rohn et. al. less than 10% of the sites had greater than 0.2 mg/L TP, placing the UT Chick in at least the low 90<sup>th</sup> percentile of that dataset too. DEQ data indicates that Spring Branch TP below the STP is greatly in excess of regional background levels. **Having the median TP in their receiving stream at nearly twice the 100<sup>th</sup> percentile of Coastal Plain streams, and at nearly the 99<sup>th</sup> percentile statewide points to the excessive nature of the Spring Branch STP total phosphorus discharge.** See the Figure below for a graphic presentation of the Spring Branch TP below the STP compared to Coastal Plain and statewide TP.



VDEQ is considering total phosphorus concentrations in the range of 0.2 mg/l as thresholds for future phosphorus water quality standards. This is well below the 0.43 mg/l median and 0.71 mg/l mean TP level in Spring Branch below the STP outfall. If or when TP water quality standards are enacted by VDEQ and the SWCB, Spring Branch below the STP would again be listed on the 303(d) Impaired waters list for TP, in addition to the current benthic impairment.

5. Sixth paragraph – “we do not believe it is approvable by EPA”

*Response: EPA Region III has already reviewed a draft of the TMDL Stressor Analysis and supports it without qualifications.*

6. Seventh paragraph – “the outcome has completely changed, loadings had reversed 100%”

*Response: MapTech noted during the second meeting that they the modeling was not finalized and that they would continue to try to improve the figures presented for the existing condition which indicated that 70% of the current loading was attributed to agricultural runoff. MapTech made it clear that there would be little or no change in the final **allocations**. At this point the reductions needed included a 100% reduction of failing septic systems and sewer line leaks, approximately 85% reduction from the STP and 90%+ reduction from nonpoint agricultural sources.*

*During the final TAC meeting MapTech's modelers were able to improve the model but the results could not be relayed in time for them to be presented at the meeting. Refinement of the input data, using local data sources for sediment nutrient values rather than more generalized values, resulted in a reduced load from agricultural (land-based) sources). The improved results indicated that about 70% of the existing loading could be attributed to the point source discharge and about 20 percent to agricultural runoff, a much more likely scenario. However, as MapTech noted during the TAC meeting **there was very little change in the final TMDL loading allocations**. The refined reductions included a 100% reduction of failing septic systems and sewer line leaks, approximately 83% reduction from the STP and approximately 83% reduction from nonpoint agricultural sources. Thus the outcome, the allocations, actually changed very little when the model sediment nutrient inputs were improved, contrary to your statement above.*



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

W. Tayloe Murphy, Jr.  
Secretary of Natural Resources

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Robert G. Burnley  
Director

Gerard Seeley, Jr.  
Regional Director

August 26, 2005

Mr. Larry Malcolm  
Sussex Service Authority  
4385 Beef Steak Road  
Waverly, VA 23890

RE: May 17, 2005 Correspondence on Spring Branch TMDL

Dear Larry:

Thank you for your written comments on the Spring Branch Benthic TMDL. I must apologize for the delay in completing this reply. I will take measures to ensure that you and others will receive a more prompt response in the future.

Responses to your comments are italicized below each comment submitted following this cover page.

Please let me know if you have any questions regarding the information provided. I am looking forward to our continued interaction throughout the Spring Branch Benthic TMDL development process.

I would be happy to make myself available to further discuss this project and upcoming efforts.

Sincerely,

A handwritten signature in cursive script, appearing to read "Chris French".

R. Christopher French  
TMDL Coordinator  
Piedmont Regional Office, DEQ

## Sussex Service Authority Comments (May 17, 2005)

In our view, the Technical Advisory Committee should address all of these to do a TMDL.

- Point source and non-point source inputs should be quantified, as we noted initially.

*The TMDL process accounts for all potential sources in the watershed and that information is reviewed by the Technical Advisory Committee.*

- The presentation stated that the Department is working to remediate the old Borden Chemical glue manufacturing plant site "through existing programs outside of TMDL purview." We are not sure what existing programs outside of the TMDL purview are addressing the remediation and would like to request further information at this time as to which programs are? But to not include the sites in the TMDL process does not seem acceptable. The TMDL needs to address all of the inputs, and the Department should not exempt that part of the process.

*As you know, identifying the source(s) of potential toxicity in Spring Branch has been problematic. Current water quality data does not show a definitive toxicity connection from the former Borden site to the Spring Branch benthic impairment. Positive toxicity data is primarily from bioassay tests, which resulted in effects on fathead minnow survival and growth. EPS stipulated that "...these data need to be carefully compared to other water quality data available...to determine the presence of toxicity."*

*DEQ performed substantial follow up monitoring for volatile organics, semi-volatile organics, clean metals, and sediment organic chemical analysis in Spring Branch and the reference station on Warwick Swamp (used as a background). This sampling resulted in an expenditure of approximately \$16,500.00. Every organic compound tested at stations 5AXFG000.04 (the tributary below the former Borden site), and 5ASRN003.69 (the sampling station below Rt. 460) has come back below detection. Clean Metals were at normal concentrations.*

*Therefore DEQ has looked into addressing the former Borden site through the VPDES permit program because the facility formerly discharged under a VPDES permit. However, we found that because a VPDES permit is no longer in effect for the facility, this route is not appropriate. Because past data indicates groundwater and soil contamination on the old Borden Chemical site, DEQ is considering working through the Pollution Response Program and the Voluntary Remediation Program to address those on-site issues.*

- To shield the owners of the old Borden Chemical site from liabilities related to the TMDL or its implementation, and to the extent that a site contributes to Spring Branch water quality problems, the agencies have a responsibility to identify viable former owners/operators to bear those responsibilities or, in the absence of such responsible parties, we should discuss who should bear the responsibilities.

*DEQ agrees that all responsible party(ies) will need to be identified when remediation of toxicity source(s) occurs. DEQ will work within regulations to that effect. In the absence of*





# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

W. Tayloe Murphy, Jr.  
Secretary of Natural Resources

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Robert G. Bumley  
Director

Gerard Seeley, Jr.  
Regional Director

October 28, 2005

Mr. Andrew Mayes  
328 Coppahaunk Avenue  
Waverly, Virginia 23890

RE: August 23, 2005 Correspondence on Spring Branch TMDL

Dear Mr. Mayes:

Thank you for your written comments on the Spring Branch Benthic TMDL. We received these after the second TAC meeting and just prior to the public meeting on August 25<sup>th</sup>. We would like to take this opportunity to address your concerns. I am copying Susan Irving on this correspondence as she requested your appointment as the Town of Waverly's designated TAC representative.

Responses to your comments are italicized below a summary of your submitted comments following this cover page. I've attempted to isolate the key points from your letter in order to properly address them. Your comments and this reply document will become part of the official public record for this TMDL project. These records, like all other comment documents, will be posted on the DEQ TMDL Web site with the Spring Branch TMDL document. As such, if there are concerns or questions about how your comments were paraphrased, the original document will accompany this reply and provide context.

Please let me know if you have any questions regarding the information provided. I look forward to our continued interaction on the Spring Branch Benthic TMDL.

Sincerely,

A handwritten signature in cursive script, appearing to read "Chris French".

R. Christopher French  
TMDL Coordinator  
Piedmont Regional Office, DEQ

Cc. Susan Irving, Mayor, Town of Waverly

**Andrew Mayes – Town of Waverly TAC Representative (August 23, 2005)**

(Comments are paraphrased due to length. Please refer to Mr. Mayes letter for complete comments.)

Comment #1: First paragraph. "There is an air of rushing this process through with little input mattering from any outside sources. ...I would be surprised if the criteria for completing a proper TMDL has been completed. In the first public meeting the Virginia Department of Environmental Quality (VDEQ) speakers acknowledged that they did not meet their own public notice requirements for the meeting."

*The development of the Spring Branch TMDL followed guidance from EPA and the VA State Water Control Board. In addition, we have followed the applicable requirements outlined in Virginia's 1997 Water Quality Monitoring, Information, and Restoration Act, as adopted into state code (§ 62.1-44.19:4 to 19:7). Guidance Documents include the EPA Stressor Identification Guidance Document (EPA 2000) and the Public Participation Procedures for Water Quality Management Planning (DEQ, 2004).*

*Throughout this process, we have used several methods to engage members of the local community and the identified principal stakeholders. Meeting notices were placed in the local newspaper - The Sussex Surry Dispatch – prior to both public meetings. The Dispatch also covered the second public meeting prior to the August public meeting and afterwards. Public notices were posted on the DEQ website and the VA Regulatory Electronic Town Hall (<http://www.townhall.state.va.us>). The Town of Waverly (through Ms. Pam Diehl) offered to post the final meeting public notice in the Waverly Town Hall, where we held the August meeting. In addition, numerous personal emails and phone calls were made by DEQ staff and local stakeholders to recruit involvement in this project.*

*The Sussex Service Authority (SSA), AquaLaw (SSA's legal representative), the Town of Waverly, and three local landowners on Spring Branch did participate in some form; either through the TAC, attendance at public meetings, and/or general interaction with DEQ staff. This is in addition to other community stakeholders. Approximately 20 individuals participated in the various TMDL meetings. No Town of Waverly elected official, staff, or representative attended the August public meeting held in Waverly council chambers.*

*The statement that, "...DEQ acknowledged that they did not meet their own public notice requirements...", is inaccurate. You are referring to a reply made to a statement at the first public meeting by a community member. When DEQ was questioned on its outreach effort for the TMDL, we stated we did not mail letters to all property owners within the watershed. Resources to do so were unavailable. However, this is not required under the Public Participation Procedures as listed above. At no time did we state proper procedures were not followed.*

Comment #2: First Paragraph. "The Spring Branch water body was discussed as one (1) "stream" at that time. Discussions regarding the nature of the water body as a stream or swamp were completed. By the first and second Technical Advisory Committee (TAC) meetings the VDEQ had broken the water body into an upper and lower section... ...Obviously the main focus is Phosphorous with minimal interest in many other toxicants or water quality issues."

*The Stressor Identification Analysis (TMDL document chapter 3) looked at a wide variety of stressors which could contribute to the benthic impairment. Temperature, organic matter, low dissolved oxygen, toxics, pH, dissolved oxygen, and nutrients were all evaluated. From this analysis, it became clear the issues in the upper watershed were different than those in the lower watershed. Water quality data fully supports that the lower watershed is nutrient enriched, with very high levels of Total Phosphorus present in stream and in Bryant Pond. Water quality data*



also supports the influence of natural swamp water conditions (low pH and low dissolved oxygen) and intermittent flows in the upper watershed (which recently went dry or pooled without flow).

DEQ did extensive follow up toxics monitoring after initial bioassay tests indicated there was potential toxicity in the watershed. Sampling occurred during both wet and dry weather conditions and no compound could be found at concentrations high enough to cause toxicity. In fact, most were below the minimum level of detection. This sampling resulted in an expenditure of approximately \$16,500.00. As such, we have conducted a thorough follow up on the potential toxicity issue in Spring Branch. The data does not show any direct evidence of toxicity to the benthic community of Spring Branch.

Comment #3: I believe SSA personnel physically showed VDEQ personnel issues that created the elevated results noted in the VDEQ data, and these had nothing to do with the SSA or STP.

SSA personnel pointed out suspected issues in the watershed that could possibly contribute to water quality issues in Spring Branch. Further investigation of these issues did not yield any tangible results that would imply water quality degradation. DEQ and SSA staff walked a tributary to Spring Branch on August 11, 2005 and identified a sewer line break. This raw sewage contribution was calculated into the TMDL.

Comment #4: The information provided by the VDEQ pretty much indicated that with the sediment loads in the water body, without dredging of the lower section of Spring Branch and Bryant Pond, the "recycling" affect would continue. To this the VDEQ was asked when they planned to dredge the water body...

The next phase, the TMDL Implementation Plan Development, will describe the proposed methods of non-point source load reduction in the watershed, including the Best Management Practices (BMPs) proposed. Implementation efforts may consider dredging Bryant Pond or other conservation efforts to address the very significant nutrient loads in the pond sediments. It is premature to speculate on possible avenues at this time.

Comment #5: The second TAC meeting occurred on August 10, 2005. I was contacted by SSA personnel in the afternoon of August 11, 2005 to be informed that the VDEQ had notified them that morning that the VDEQ had reran the numbers and the model and now indicated that the STP was 70% responsible for the Phosphorous loading and all other non-point sources situated along the water body were only 30% responsible. This is a heavily farmed area. A 180 degree turn in the results of this information presented in the TAC meeting the PREVIOUS DAY! This appears to help resolve the issues brought up in the TAC meeting by the stakeholder representatives and helps to more fully place the blame on the STP... This process does not seem to be in the best interest of the water body or the stakeholders.

MapTech noted during the second TAC meeting the modeling was not finalized and they would continue to try to improve the figures presented for the existing condition which indicated that 70% of the current loading was attributed to agricultural runoff. **MapTech made it clear there would be little or no change in the final allocations.** At this point, the reductions needed included a 100% reduction of failing septic systems and sewer line leaks, approximately 85% reduction from the STP and 90%+ reduction from nonpoint agricultural sources.

During the final TAC meeting MapTech's modelers were able to improve the model but the results could not be relayed in time for them to be presented at the meeting. Refinement of the input data, using local data sources for sediment nutrient values rather than more generalized values, resulted in a reduced load from agricultural (land-based) sources. The improved results indicated that about 70% of the existing loading could be attributed to the point source discharge

August 23, 2005

Virginia Department of Environmental Quality  
Piedmont Regional Office  
4949-A Cox Road  
Glen Allen, Virginia 23060

Attn: Mr. Chris French

RE: TMDL – Spring Branch

Dear Mr. French:

The TMDL process for the Spring Branch water body has raised several concerns for me. There is an air of rushing this process through with little input mattering from any outside sources. The outward appearances is the process is moving along to meet a deadline with minimal regard to the stakeholders, who really are the Sussex Service Authority (SSA), Town of Waverly, adjacent land owners and citizens utilizing the SSA provided services. I know it is State waters and so forth. I am not overly familiar with this particular process, but I would be surprised if the criteria for completing a proper TMDL has been completed. In the first public meeting the Virginia Department of Environmental Quality (VDEQ) speakers acknowledged that they did not meet their own public notice requirements for the meeting. The Spring Branch water body was discussed as one (1) "stream" at that time. Discussions regarding the nature of the water body as a stream or swamp were completed. By the first and second Technical Advisory Committee (TAC) meetings the VDEQ had broken the water body into an upper and lower section. Then proceeded to note that there is an unknown toxicant up gradient and significant impairment, but focused on the lower section from an area just above the sewer treatment plant (STP) to the discharge of Bryant's Pond. Obviously the main focus is Phosphorous with minimal interest in many other toxicants or water quality issues.

During the second TAC meeting, discussions of the provided information were completed. The VDEQ presented modeling information indicating that the STP was 30% responsible for the Phosphorous issues in the lower section of Spring Branch and other non-point source issues were 70% responsible. The bulk of the non-point sources was agricultural related. Additionally, the VDEQ described the lower section of Spring Branch and Bryants Pond as being laden with Phosphorous enriched sediments that "recycle" and continue to provide nutrient enriched conditions to the lower section of the water body. It was stated in 1939, Bryants Pond was ten (10) feet deep and is currently only three (3) feet deep due sedimentation. The process of the algae growth and then dying and settling in the pond and water body were discussed (eutrophication). As were the facts that by biological processes and the current depth of the water body, these enriched sediments recycle themselves, thus perpetuating the process and results that have been described to impair the water body, such as low D.O., high pH, etc.

The VDEQ indicated that there would be a proposed limit on the STP of 0.13 milligrams per liter (mg/L) of Phosphorous allowed in the next permit cycle for the plant. This is for a plant that under it's current permit has no Phosphorous limits. As the only permitted stakeholder, the STP is really the main party to be immediately affected by this proposed TMDL. As a result of the information provided, additional discussions were completed regarding other non-point sources that discharge via storm water ditches to an area up stream of the STP that recent VDEQ data indicated was high in fecals and Phosphorous. I believe SSA personnel physically showed VDEQ personnel issues that created the elevated results noted in the VDEQ data, and these had

nothing to do with the SSA or STP. Additionally, it was brought up by me that the end result in all of this is significant expense to the SSA for plant upgrades to meet the TMDL. I spoke that based on what was presented, all of the plant upgrades to the STP necessary to meet the proposed TMDL were likely not going to help improve the impairment identified in Spring Branch. The information provided by the VDEQ pretty much indicated that with the sediment loads in the water body, without dredging of the lower section of Spring Branch and Bryants Pond, the "recycling" affect would continue. To this the VDEQ was asked when they planned to dredge the water body and they indicted that would be asked of the land owners, at the land owners expense. It is almost laughable to believe that the land owners are going to foot the bill to dredge the water body. If that expense is not great enough, what about the dewatering and disposal of the nutrient laden sediments? My statement to the VDEQ personnel at the TAC meeting was that this whole process seems to be a numbers game for them to meet their TMDL deadline and that the end result for this water body is minimal net gain in the quality of the water. This process is going to add great capital expenditures to the SSA that will have to be passed on to a very small and low to medium income user base. I would asked that you contact the Town of Waverly (804) 834-2330, and speak with Mayor Irving and ask how difficult it already is for a large segment of the Town of Waverly's population to currently pay their water and sewer bills.

The second TAC meeting occurred on August 10, 2005. I was contacted by SSA personnel in the afternoon of August 11, 2005 to be informed that the VDEQ had notified them that morning that the VDEQ had reran the numbers and the model and now indicated that the STP was 70% responsible for the Phosphorous loading and all other non-point sources situated along the water body were only 30% responsible. This is a heavily farmed area. A 180 degree turn in the results of this information presented in the TAC meeting the PREVIOUS DAY! This appears to help resolve the issues brought up in the TAC meeting by the stakeholder representatives and helps to more fully place the blame on the STP. I asked the SSA if the VDEQ indicated that there was to be another TAC meeting since either the entire presentation the previous day was erroneous, or since some new and previously undivulged information had been located, so the new information could be formally presented. SSA personnel indicated that the VDEQ stated that they were moving forward to going to the final public meeting on August 25, 2005 without further redress of the information. This process does not seem to be in the best interest of the water body or the stakeholders.

Having reviewed the various hand outs provided by the VDEQ I noticed that following a 1998 lawsuit, in which the EPA lost, a 1999 decree required that the EPA and Virginia complete 636 TMDLs by 2010. My question to the VDEQ and Water Control Board is, if in 1999 the VDEQ had knowledge that this issue was pending, why did it allow for the Spring Branch STP and I would assume many other STP's, to complete major upgrades at enormous expense without any regard to this impending issue when their permits were reissued? I understand that the TMDL process had not been completed on the associated water body at the time, but was their any foresight into the reality of the process and the affect on the STP? My understanding is that during the re-issuance of these permits and the required upgrades to meet the permit limits, there is heavy involvement between the STP owner's and VDEQ. I would imagine that plat designs and upgrades are based on requirements set forth by the VDEQ. Therefore, is it not negligent on the part of the VDEQ to not to have incorporated this TMDL issue in the process when they were fully aware of the necessity to comply with the 1999 decree? This of coarse would affect any STP being issued a new permit after the decree was issued on a water body with an impending TMDL. It is now 2005, and you have to wonder how many STP's have completed plant upgrades based on past VDEQ provided information who have not been through the TMDL process, but have to face it in the near future. The SSA is now faced with significant expense to upgrade a

plant that was recently upgraded to meet permit requirements issues by the VDEQ after the 1999 decree to complete the TMDLs.

The sour pill really boils down to this point: The limits proposed for the STP will likely have marginal benefit for the Spring Branch water body, based on the information provided by the VDEQ. You have multiple feet of Phosphorous laden sediment in an impaired water body and pond, with no means to facilitate the removal and disposal of the sediments. Therefore, the continued "recycling" of the Phosphorous load already in the water body will continue. The net result is a large capital expenditure for a rural STP in which a small user base has to foot the bill. The VDEQ ticks of another number and moves on and leaves a water body with a Cadillac treatment plant and a nutrient laden water body and pond. Makes great sense to me. I can go along with things that have a real purpose and show a net gain result for the time and money invested. This water body has been impaired and at times sterile during my entire lifetime and during most everyone's lifetime in this area. This TMDL has potential long lasting economic affects for the citizens, municipality, SSA and any future businesses that wish to acquire a permit in the watershed area. I would request this issue be further studied and an economic impact statement be completed to determine if the net gain equals the capital expenditure required to meet the proposed TMDL. That should include a cost to truly deal with the issue including dredging and disposal of the sediments noted in the water body as previously described by the VDEQ.

I may be contacted at (804) 337-1858 to discuss this correspondence.

Sincerely,

Andrew W. Mayes  
Town of Waverly – TAC Representative

cc: Mayor Susan Irving, Town of Waverly